PROGRAM ACTIVITIES OF THE DIVISION OF ACCIDENT PREVENTION U.S. PUBLIC HEALTH SERVICE*

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THE U.S. Public Health Service is the principal agency of the federal government that is concerned with the prevention of disease and injury and the general improvement of the health of the people of the Unted States.

The Division of Accident Prevention is the organizational unit of the U.S. Public Health Service that is primarily concerned with accidental trauma. The division's activities are of two general kinds—fact finding and a program of activities designed to prevent or minimize injury. The accompanying figure describes in a simple manner how the division functions.

Through research grants funds are made available to public and private nonprofit institutions and organizations to conduct research on the prevention of accidents. The Experimental Research Branch performs research directed by the division and conducted by division personnel with division facilities or by contracting with other research organizations. Information obtained by the Epidemiology and Surveillance Branch about accidental injuries and deaths from death certificates, from the National Health Survey, and from other sources is accumulated and analyzed in various ways to determine the extent and nature of the problems involved, and to determine hypotheses for

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Since this conference was held the Division of Accident Prevention has become the Injury Control Program, National Center for Urban and Industrial Health.

DIVISION OF ACCIDENT PREVENTION

Fact-finding

Research Grants Branch
Experimental Research Branch
Epidemiology and Surveillance Branch

Program

Community Services Branch

Modification or control of agents	Information and education
Reduction of the environment's injury potential	Reduction of the seriousness or aggravation of injuries that occur

countermeasures. This branch also contracts for special studies and investigations relating to injury control. Another activity involves the work of surveillance teams. These teams consist of a small number of individuals from various professional disciplines who investigate in depth the circumstances surrounding the causation of injuries.

The information from these fact-finding activities is utilized to develop program activities designed to prevent or minimize the injuries that occur as a result of accidents. In general the approaches taken in program activities are:

1) *Modification or control of agents of accidents and agents of injury.* Working with manufacturers in many instances has resulted in the modification of a product.

2) *Reduction of the injury potential of the environment.* The division has been instrumental in stimulating the need for and cooperating in the development of standards by the National Bureau of Standards, American Standards Association, and other agencies. The division encourages and assists in the development of protective community laws or ordinances.

3) *Information and education.* Education of the public about a particular injury problem and about the suggested behavioral or environmental changes required for control is accomplished through use of mass media and through the program activities of state and local health departments. These program activities include group meetings, education in schools, the showing of films, exhibits, and the injury-prevention aspects of other public health programs.

4) *Reduction of the seriousness or aggravation of injuries that*

occur. The division works with communities to improve their emergency medical services.

I should now like to mention the activities of the Division of Accident Prevention as they relate more directly to the subject being discussed at this conference.

One of the first research efforts of the division was to negotiate a contract with the Tennessee Department of Public Health for a study entitled "Accidental Injuries to Tennessee Children." The study consisted of household interviews of 383 families in which a child had had an accidental injury and had received service from the Crippled Children's Service of the State Department of Public Health during the two-year period 1959 to 1961. The study attempted to relate environmental, physical, sociological, and physiological factors to the causation of accidents in children. Of the 308 burn incidents studied, 105 patients had suffered burns in which their clothes caught fire.

Another project recently completed was an evaluation of flame-retardant fabrics in two nursing homes in Arkansas. In these nursing homes half of the sheets, pillowcases, bathrobes, blankets, bedspreads, drawsheets, and other clothing and fabric items were treated with tris(1-aziridinyl) phosphine oxide and tetrakis(hydroxymethyl) phosphonium chloride (APO-THPC) as a flame retardant. A small number of THPC-treated sheets was also supplied for staff use and evaluation. Conclusions indicate that there were no allergic reactions on the part of any of the patients that could be attributed to the use of fabrics with the flame-retardant finishes. Also there was no problem of acceptability of the hand, odor, or other physical or esthetic properties of the treated fabrics. Samples of materials used were pulled before the first washing, after 1, 5, and 10 washings, and at regular intervals thereafter for the life of the fabric for evaluation by the U. S. Department of Agriculture Laboratory in New Orleans, La. Sixteen different tests including flammability, rip test, tear strength, and many other tests were performed. Because of the short time involved in the project, definitive conclusions could not be reached regarding the retention of flame retardancy throughout the normal life of the treated materials and the differences in wear and tear qualities of treated and untreated materials.

We also conducted a search of the medical and legal literature for references to cases of burns involving the ignition of clothing. Abstracts of important papers are kept in the division's library.

A very important current piece of research involves the Burn Unit at the University of Michigan Medical Center. Here we are sponsoring a study on burn injuries (National Burn Information Exchange) to obtain information regarding the etiology and cost involved in burns and methods of treatment.

This project was initiated in 1964. Information is being obtained from Burn Units at the University of Michigan Medical School and at St. Joseph's Mercy Hospital, Ann Arbor, Mich.; the University of Cincinnati, Cincinnati, Ohio; the Medical College of Virginia and St. Philip's Hospital, Richmond, Va.; Cook County Hospital, Chicago, Ill.; the Medical College of South Carolina; the University of Texas School of Medicine at Galveston, and the Brooke Army Medical Center, San Antonio, Texas. These Burn Units include a high proportion of serious cases referred to them by private physicians and from other sources of treatment.

Of the cases studied at these special Burn Units (and bear in mind that these are *severe* burn cases), about 40 per cent are reported to have involved ignited clothing. An analysis was made of the type of clothing and fabric ignited from the reports of three of these units—the University of Michigan, the Medical College of Virginia, and St. Philip's Hospital. Of the 111 patients whose clothes ignited (burning 153 articles of clothing), 92 were reported to be cotton, 38 were unknown or not specified, and the remaining 23 articles were either cotton or a synthetic comprised of synthetics and silk or wool.

Other fact-finding activities of the division include the work of a surveillance team located at the Denver General Hospital in Denver, Colo. Here a five-man professional surveillance team investigates in depth the circumstances surrounding the occurrence of various types of injuries. This team has investigated a number of burn cases involving many different agents. A small number of burn cases involving ignited clothing have been investigated and, as part of the investigative procedure, pieces of the clothing that burned are obtained when possible. We are making copies of these reports available to the National Bureau of Standards for their work pertaining to fabric flammability. Our over-all plan is eventually to install 8 or 10 of these surveillance teams in various geographic areas of the country so that we may have a geographically representative sampling of injuries investigated in depth. Our second team now is being formed in Boston.

Our Program has included the Textile Flammability Conference held in Boston on October 2, 1962, under the sponsorship of the National Fire Protection Association and the Division of Accident Prevention of the U.S. Public Health Service. The proceedings of that conference were published by the National Fire Protection Association. A significant number of the published proceedings was purchased by the Division of Accident Prevention and distributed throughout the country and overseas. Since that meeting an exhibit has been developed, showing "concepts of preventing burn injuries" through the use of flame-retardant fabrics, materials, and clothing. Variations of this exhibit have been shown at 15 national, regional, and international meetings. These conferences have included the American Public Health Association, the American Society of Plastic and Reconstructive Surgeons, the American Academy of Pediatrics, the National Home Economics Association, the American Medical Association, the Greater Kansas City Home Show, the American Hospital Association, the American College of Surgeons, and many other organizations. More than 100,000 people in carefully selected audiences have been able to see that certain flame-retardant fabrics are now available in limited quantity, how they burn or do not burn, how they feel, how they look, and how they may be used. Excellent cooperation has been received from members of state and local health departments who have assisted in manning this exhibit. Local fire marshals and firemen have helped to arrange proper safeguards for this exhibit. Many United States industries have contributed materials for the exhibit and for distribution of copies of them to all participants. We plan to continue this kind of educational activity.

At the request of Al Higgins Productions, the division staff and representatives of the National Fire Protection Association served as technical advisors for the film *Your Clothing Can Burn.* This film has been promoted through our regional offices. Many state health departments have purchased copies of this production for use in their health education programs.

Through our direction of women's activities interest has been stimulated and education programs have been developed for the National Grange, the AFL-CIO Women's groups, the National Congress of Parents and Teachers, and other associations. Division staff members have assisted in the preparation of articles on clothing burns for

many publications including *U.S. Medicine, The Reader's Digest,* and *Pageant.*

Internally, our division has been assisting the Bureau of Medical Services of the U.S. Public Health Service, the Veterans Administration, the Division of Indian Health, the Department of Defense, and many other governmental agencies, including the General Services Administration, by supplying technical material and information on injuries and deaths associated with clothing and burns.

I have abstracted five items from the summary of our recommendations to the Safety Officer of the Bureau of Medical Services of the Public Health Service: 1) all new mattresses, foam pillows, and bed pads should possess flame-resistant covers; 2) all new cubicle curtains, bedside screens, and draperies for patients' rooms should be flame-resistant; 3) all bedding in connection with oxygen tent service should be flame-resistant; 4) flame-resistant robes and pajamas should be available for high-risk smokers; 5) other bedding of flame-resistant materials should be purchased as money becomes available. These are but a few of the recommendations that are now being made throughout government circles to stimulate the purchase of flame-retardant clothing and fabrics that will reduce the incidence of burn injuries.

Last year a three-year burn control project was begun in Jefferson County, Ala. This is in a well-staffed, local health department situated in Birmingham, with established health programs throughout all communities in the county. The health department-medical complex in this county consists of a teaching hospital of the University af Alabama Medical College, a children's hospital, a veterans' hospital, and a rehabilitation center. Its first effort in determining the nature of the burns problem in that community was to conduct a retrospective study of patients with burns who were treated or hospitalized in five Jefferson County hospitals during a 5-year period beginning February 1, 1961, and extending through January 1, 1966. All injuries from burning included in this report occurred in the home or on the home premises. Reports on approximately 1,395 patients were analyzed. Of the total of 1,395 admitted, 179 were listed as having their clothing ignited; and 101 did not state whether or not the clothing caught fire. A further analysis indicates, however, that it is the burning clothing that contributes to the more serious burns that require lengthy hospitalization and extensive surgery. For instance, of the 179 whose

clothing ignited, 37 per cent required skin grafts and extensive surgery, whereas only 6 per cent of those whose clothing did not ignite required extensive surgery and hospitalization. The relation of ignited clothing to the degree of burn indicates that 16 per cent of those whose clothing ignited received third-degree burns compared to 3 per cent of those whose clothing did not ignite. The report also shows that a greater number of days of hospitalization was required on a percentage basis for those whose clothing did not ignite. It is also apparent from this analysis that the per cent of the body area burned is much greater in the cases where the clothing ignites when compared to the cases where ignition of the clothing is not involved. The health department is now prepared to launch a very intensive community educational program to reduce the number of injuries from burns.

It might be well for you to know that we have conducted a number of other small pilot programs at the community level that are forerunners of the Birmingham Project. In Mississippi County, Ark., the focus was on the fires. Detailed investigations (with help from the county fire marshal) and analyses of the causative agents of the home fires were made. Tabulations were also made of the admissions for nonfatal burns in the local county hospital. An educational program was developed. It consisted largely of a visual demonstration that explained dramatically the properties of petroleum products and how electricity and home maintenance in general are involved in home fires. After this educational program was extensively used in the community for 1 year the incidence of nonfatal injuries from fire sustained by patients admitted to the local hospital was reduced by approximately 50 per cent. The fire-prevention kit developed here is now being produced commercially. It is being used in more than 35 states by health departments, fire departments, and others. Flame-retardant fabrics are always mentioned when this kit is used.

In Robeson County, N. C., a project was focused on the high-incidence group (which in this case was the nonwhite child under 10 years of age). The investigations revealed how he was burned, how he was treated, length of hospitalization, cost of hospitalization, and other related items. One of the most significant dividends from this study was our information on the emergency first-aid treatment of burns in this community. In some cases this involved the folklore of the Indian tribes and mixed racial groups. In many cases a minor burn was infected

and compounded, which caused a severe injury requiring extensive plastic surgery and rehabilitation. Sometimes frog viscera, contaminated water, and horse manure were used in emergency treatment for burns sustained by children. The local health department initiated a comprehensive educational program on first aid for burns throughout the rural areas of the county.

Another pilot project that the division supported was in the State of Mississippi. It involved four counties near Jackson, where the focus was on injuries from burns as a *community problem.* This resulted in an extensive educational program.

One other pilot program involves the implementation of an inspection service for nursing homes and an educational program carried out by the State Health Department of Idaho, with heavy emphasis on efforts to prevent injuries to patients caused by fire.

From this résumé of activity, it should be apparent that public health officials are more than casually interested in the medical problems of burns and in their prevention and minimization.

We solicit the full cooperation of the textile industry, retail merchants, professional groups, and volunteer organizations throughout the United States to combine their talents and energies in order to improve the technology of, and to make more readily available, flame-retardant clothing, especially for children, for the aged, for the disabled, for those in special high-risk occupations, and for sportsmen who must protect themselves from serious and disabling burns.

The Public Health Service plans to continue its fact-finding efforts, and to work with industry, medicine, private organizations, and government agencies in seeking solutions to the problem. We shall continue to provide leadership for and encourage state and local health agencies in developing and conducting educational and informational programs to increase man's knowledge of hazards, his perception of the risk involved, and improve his ability to cope with situations that produce injuries.